

REMARKS

By the above amendment, the Abstract has been amended to correct a minor informality, claim 10 has been amended in a manner which should overcome the objection to claims 10-13 and two new dependent claims 14 and 15 have been presented.

Further, submitted herewith is a corrected sheet of drawings of Fig. 1.

As to the objection of claims 10-13, Applicants note that claim 10 has been amended to refer to "an" output in line 9, as pointed out by the Examiner, as well as in line 24, which was not referred to by the Examiner. Furthermore, "the rotation" in line 23 has been changed to "rotational" as suggested by the Examiner such that Applicants submit that the amendment of claim 10 overcome the objection of claim 10 and therewith its dependent claims.

As noted above, a new dependent claim 14 has been added which defines the feature that the image forming means is an electrophotographic unit as clearly illustrated in the drawings of this application and as described in paragraphs [0017] - [0019], with claim 14 further defining the web printer as being an electrophotographic printing apparatus. Additionally new dependent claim 15 recites more specifically the location of the web feed rates detection means.

Applicants note that the present invention relates to web printers of the type that form images on webs carried at a high speed and, as now defined in claim 14 are of the electrophotographic printing type, and has as an object to provide a printer that, irrespective of the web type, enables stable feed of the web at high speed and with high accuracy. More particularly, in a printing apparatus in which visible images

on a photosensitive body are directly transferred on a sheet to perform a multi-color printing, a relative color deviation of respective colors is caused depending on sheet transport accuracy. Thus, the present invention provides a structural arrangement for enhancing the sheet transport accuracy and, has a measure for enhancing the sheet transport accuracy in that the present invention employs a high tension sheet transport technology. By increasing of tension, influences due to disturbances can be stabilized in both main and sub scan directions. The control of the sheet transport accuracy in the sub scan direction is performed at outfeed rollers, which are disposed downstream of a fixing unit wherein heat is applied to the sheet having a unfixed toner image thereon so as to fuse the toner and deposit the same on the sheet. As is known in the art, the sheet, after heating, shrinks depending on moisture evaporation contained therein. Additionally, heat which is applied to the sheet remains therein and the temperature of the sheet generally rises more than 100°C. The outfeed rollers absorb the heat and expand, and therefore, even if the angular velocity of the rollers is kept constant, the sheet transport amount increases and because of the shrinking of the sheet, the sheet transport velocity is further increased. Due such phenomenon, the sheet transport velocity at the image transfer portion is increased, and color deviation is caused during multi-color printing. The present invention resolves such problems by utilization of a roller which is provided with a rotary encoder and a detector therefore so that a transport velocity of the sheet is detected and the detection result is fed back to the outfeed roller controller to control the same. Applicants submit that the present invention recites a particular configuration of the web printer which is not disclosed or taught in the cited art as it becomes clear from the following discussion.

Referring to independent claim 10, as illustrated in Fig. 1 of the drawings of this application, the web printer includes a buffer means for adjusting the traveling position of a web one under a slack status thereof which is represented by the buffer unit 4 in Fig. 1. Furthermore, infeed rollers carry the web delivered from the buffer means which includes the infeed roller 6c, for example and a detection means detect the traveling position in a width direction of the web as represented by the sensor 8c, for example. Claim 10 additionally recites the feature of skew correction means represented by the skew correcting unit 8, for example, for adjusting the traveling position in width direction of the web according to an output from the detector 8c. Furthermore, a dancer roller, 6e, for example, is provided between the infeed rollers 6c and the skew correction means 8 and applies variable tension on web according to a position thereof with an infeed roller control being provided for stabilizing the dancer roller at a desired position. Image forming means 10 in the form of an electrophotographic unit 1b provided at an after-stage of the skew correction means in order to form an image on the web, and fixing means represented by the heating unit 11, for example, is provided at an after stage of the image forming means and fixes the image on the web. Outfeed rollers provided in the unit 15 are provided at an after-stage of the fixing means and discharge the web outside the web printer with a web feed rate detection means as represented by a speed detection roller 18, being provided at a fore stage of the image forming means 10, and an outfeed roller controller controls the rotational speed of the outfeed rollers by controlling the speed of the motor 15a in accordance with the output of the speed detection roller 18, for example. With this configuration, as described above,

a printer which enables stable feed of the web at high speed and with high accuracy is provided.

The rejection of claims 10-13 under 35 USC §103(a) as being unpatentable over Greiner (U.S. 3,561,654) in view of Kondo (U.S. 5,947,617) and Reyner (U.S. 6,052,144) is traversed insofar as it is applicable to the present claims and reconsideration and withdrawal of the rejection are respectfully requested.

As to the requirements to support a rejection under 35 USC §103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under '103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002) wherein the court in reversing an obviousness rejection indicated that deficiencies of the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge". The court pointed out:

The Examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is immaterial to patentability, and could not be resolved on subjected belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher."... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion. (emphasis added)

In setting forth the rejection utilizing Greiner, the Examiner recognizes that:

Greiner does not teach a buffer means for adjusting a traveling position of the web under slack status, detection means for detecting the traveling position in a width direction of the web, and skew correction means for adjusting the traveling position in width direction of the web according to the output from said detection means. (Emphasis added)

Applicants note that in addition to the deficiencies of Greiner, recognized by the Examiner, irrespective of the position set forth by the Examiner, Greiner does not disclose or teach the claimed features of "infeed rollers for holding from both sides, and carrying, the web delivered from said buffer means" (emphasis added). As well as "a dancer roller which is provided between the said infeed rollers and said skew correction means and applies a variable tension on the web according to a position thereof" (emphasis added). Likewise, Greiner does not disclose image forming means provided at an after-stage of said skew correction means and web feed rate detection means provided at a fore stage of said image forming means and

operating in the manner set forth in the independent and dependent claims of this application. Thus, Applicants submit that claim 10 recites features not disclosed or taught by Greiner in the sense of 35 USC §103. Applicants note that in accordance with the present invention, an electrophotographic printing operation is carried out by the image forming means and the web printer forms an electrophotographic printing apparatus whereas Greiner is directed to a press printing wherein two couples of rollers 3 and 9 are controlled so as to maintain the tension of the paper web constant. Applicants submit that if the disclosure of Greiner were applied to the present invention of electrophotographic printing, as now recited in the dependent claims of this application, a relative color deviation of respective colors would be obtained, such that Greiner does not overcome the problems to which the present invention is directed. Additionally, since images in electrophotographic printing are formed fundamentally in line forms, a time factor is dominated and therefore the sheet transport velocity is a significant factor which differs from that in press printing. In any event, it is apparent that in addition to the recognized deficiencies of Greiner recognized by the Examiner, Greiner provides no disclosure or teaching of the location of claimed features which respect to one another which enable the proper operation in accordance with the present invention. Thus, Applicants submit that claim 10 and the dependent claims patentably distinguish over Greiner in the sense of 35 USC §103. And all claims should be considered allowable thereover.

As to Kondo, the Examiner recognizing some deficiencies of Greiner cites Kondo as teaching a detection means and a skew correction means. The Examiner contends that it would have been obvious to modify Greiner to have the skew correction means provided between the dancer roller and the image forming means

and the detection means as taught by Kondo. Applicants note that Kondo discloses a skew correction mechanism for roll paper in the form of a pair of first and second rollers 11a and 11b each having a guide surface for the roll paper 16 and eccentrically mounted on respective shafts. When a skew of the roll paper is detected by skew sensors 17a and 17b, the first and second rollers 11a and 11b are rotated by a predetermined angle in the opposite directions to form a step at a coupling shaft 20 as shown in Fig. 3 of Kondo so as to obtain different path lengths for the roll paper between both guide surfaces of the rollers. Applicants note that Kondo provides no disclosure or teaching of a buffer means and in feed rollers for carrying web delivered from the buffer means, and a dancer roller which is provided between the infeed rollers and the skew correction means, as recited in claim 10, which features are also not disclosed by Greiner. Thus, the Examiner's contention to modify Greiner by the teachings of Kondo "to have the skew correction means provided between the dance roller and the image forming means" (emphasis added) is not based upon any disclosure or teaching in Greiner or Kondo. Rather, this obvious modification comes about by utilizing the principle of "obviousness to try" in attempting to reconstruct the present invention which is not the standard of 35 USC §103. See In re Fine, supra. Applicants further note that if the skew correction mechanism of Kondo is introduced in an attempt to reconstruct the present invention, when the step is formed at the center of the roller pair, the web sheet will be broken or crumpled because the sheet is transported in a high tension mode to enhance sheet transport accuracy in accordance with the present invention. Thus, Applicants submit that the proposed combination will not result in an operable embodiment and fails to provide the claimed features as recited in claims 10 and the

dependent claims of this application. Furthermore, it is noted that this combination also fails to provide other features as recited in claim 10 and the dependent claims such that Applicants submit that all claims patentably distinguish over the proposed combination of Greiner and Kondo in the sense of 35 USC §103 and should be considered allowable thereover.

The Examiner, again recognizing that the combination of Greiner and Kondo has deficiencies, cites Reyner as teaching a buffer means 210 for adjusting a traveling position of a web under a slack status for preventing rupture in the web from sudden increases and decreases in web speed, and contends it would have been obvious to additionally modify Greiner to have the buffer means as taught by Reyner. Applicants note that Reyner discloses the use of multiple loop buffers wherein the formation of a loop renders the tension of the paper substantially 0. As described above, in the present invention, in order to eliminate influences due to disturbances, a high tension sheet transport technology is employed whereas, under a condition of extremely low sheet tension using multiple buffers, as in Reyner, the sheet is greatly effected by disturbances and a skew of the sheet is frequently caused. Moreover, if the sheet passes through a holding (nipping) transport rollers under such condition, crumples are frequently caused on the sheet such that Applicants submit this proposed combination again represents a hindsight reconstruction attempt in complete disregard of the teaching of the individual references. Applicants submit that in the present invention, as recited in claim 10 the infeed rollers are disposed down stream of the buffer means for carrying the web delivered from the buffer means, and a proper tension is provided to the web with a dancer roller being provided between the infeed rollers and the skew correction

means, which suppresses a possible crumpled generation and such features are not disclosed by Reyner, Kondo and Greiner, taken alone or in any combination thereof, in the sense of 35 USC §103. As such, Applicants submit that claim 10 recites features which patentably distinguish over this proposed combination of references in the sense of 35 USC §103 and claim 10 and the dependent claims should be considered allowable thereover.

With respect to the dependent claims, Applicants note that the dependent claims recite additional features not disclosed or taught by this proposed combination of references. For example, claim 12 recites a plurality of image forming portions arranged on both sides of a web surface along a web feed route, claim 13 recites the feature that the image forming portions formed on opposite sides of the web surface are arranged at alternately height levels, claim 14 recites the feature of a electrophotographic printing and claim 15 recites the feature of the web feed rate detection means is provided at an after-stage of the skew correction means none of which features are disclosed or taught in the cited art. Thus, the dependent claims further patentably distinguish over this proposed combination of references in the sense of 35 USC §103 and should be considered allowable thereover.

In view of the above amendments and remarks Applicants submit that all claims present in this application have been amended to overcome the informalities noted by the Examiner and recite features not disclosed or taught in the cited art. Accordingly, issuance of an action of a favorable nature is courteously solicited.

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deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (referencing case no. 503.40451X00).

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Melvin Kraus', written over the printed name.

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